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JC20 Rec'd T/PTO 12 MAY 2005

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Winksele, May 18, 2004

Re: International patent application PCT/BE03/00198

Filing date: 14 November 2003

Applicant: K.U.Leuven Research & Development

Title: "Method for preparing emulsions"

Our ref: K2365-PCT/go/av

Dear Madam, dear Sir,

Please find enclosed the Demand form PCT/IPEA/401.

We herewith respectfully request detailed examination for the Written Opinion with respect to the above mentioned patent application.

We herewith file without prejudice amended claims 1 -30.

Support for the amended claims is as follows:

New claim 1 is based on claim 2 and (in part) claim 29 as originally filed.

The feature of new claim 2 is disclosed on page 8, lines 26-27 of the originally filed description.

The additional features of claim 3 are disclosed on page 10, lines 16-18 of the originally filed description.

The feature of new claim 7 is disclosed on page 10, lines 11-13 of the originally filed description.

The additional features of claim 3 are disclosed on page 10, lines 16-18 of the originally filed description.

The feature of new claim 7 is disclosed on page 10, lines 11-13 of the originally filed description. New claim 13 is based on claim 30 as originally filed. Accordingly, claim 31 as originally filed is renumbered as new claim 30.

Claims 4-6, 8-12 and 14-29 are not amended.

Thank you.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'A. Bird'.

Ariane Bird

encl.: - form PCT/IPEA/401
- amended claims (4 pages)

Replaced By
Article 19

PGS-25-29

CLAIMS

1. An emulsification method comprising flowing, conducting or circulating a pre-mix of two or more immiscible liquids through one or more magnetic fields under conditions to emulsify the said pre-mix.
- 5 2. An emulsification method according to claim 1, wherein the said pre-mix of two or more immiscible liquids comprises at least a hydrophilic liquid and at least a lipophilic liquid wherein the said lipophilic liquid is selected from the group consisting of saturated hydrocarbons having long carbon chain length;
10 edible oils, fats, fatty acids and esters thereof formed from a saturated or unsaturated linear or branched aliphatic alcohol having from 1 to 18 carbon atoms or from a saturated or unsaturated linear or branched aliphatic polyol having from 2 to 6 carbon atoms or from a polyethyleneglycol or polypropyleneglycol or methoxy polyethyleneglycol having a molecular
15 weight up to 1,500; natural or synthetic, saturated, mono-unsaturated or polyunsaturated acids having from 8 to 24 carbon atoms and optionally one or more functional groups such as hydroxy or epoxy; lipids including mono- and polyacylglycerols, phosphoglycerides, sphingolipids, amino-amidines, and mixtures thereof.
- 20 3. An emulsification method according to claim 1 or claim 2, wherein the said pre-mix further comprises one or more emulsifiers or emulsion stabilizers.
4. An emulsification method according to any of claim 1 to 3, wherein the said
25 method is carried out continuously or intermittently.
5. An emulsification method according to any of claims 1 to 4, wherein the said pre-mix further comprises solid particles suspended therein.
- 30 6. An emulsification method according to any of claims 1 to 5, wherein the strength of each magnetic field is at least about 2,000 gauss.
7. An emulsification method according to any of claims 1 to 6, wherein the said

pre-mix comprises a hydrophilic liquid and a lipophilic liquid.

8. An emulsification method according to any of claims 1 to 7, wherein the said pre-mix is re-circulated from 10 to 10,000 times through said one or more magnetic fields.
9. An emulsification method according to any of claims 1 to 8, wherein the linear flow rate of said liquids through each said magnetic field is between 0.25 and 25 m/s.
- 10.A method according to any of claims 1 to 9, wherein the residence time of said fluid through each said magnetic field is between 60 microseconds and 10 seconds.
- 11.An emulsification method according to any of claims 1 to 10, wherein flowing said liquids through said magnetic field(s) is effected at a temperature between 10°C and 90°C.
- 12.An emulsification system comprising means for generating one or more magnetic fields, the said means being mounted in a circuit or loop comprising at least a liquid containing portion filled with two or more originally immiscible liquids, the said system further comprising means whereby the two or more liquids contained in the liquid containing portion can be conducted or circulated through the said one or more magnetic fields.
- 13.An emulsification system according to claim 12, further comprising a mixer mounted on the liquid containing portion of the emulsification system for stirring the two or more liquids contained therein.
- 14.An emulsification system according to claim 12, wherein the circuit or loop includes one or more tubings, channels or ducts wherein the two or more liquids can flow from and back to the liquid containing portion, and the means for circulating the two or more liquids through the magnetic field(s) includes

one or more pumps mounted in the said circuit or loop.

15. An emulsification system according to claim 12, wherein the said pump(s)
are designed such as to allow for controlling or regulating, e.g. keeping
5 constant or else varying according to a predetermined scheme, the speed at
which the two or more liquids are conducted or circulated through the
magnetic field(s).
16. An industrial process including an emulsification method according to any of
10 claims 1 to 10 as a process step.
17. An industrial process according to claim 16, wherein said process further
comprises one or more post-processing steps performed following the
emulsification step.
- 15 18. An industrial process according to claim 17, wherein said post-processing
step is a heating step.
19. An industrial process according to claim 17, wherein said post-processing
20 step is a cooling step.
20. An industrial process according to claim 17, wherein said post-processing
step is a drying step for at least partially removing the hydrophilic liquid
present in the emulsification step.
- 25 21. An industrial process according to claim 17, wherein said post-processing
step is a freeze-drying step.
22. An industrial process according to claim 17, wherein said post-processing
30 step is a step of diluting the emulsion through the addition of a liquid into said
emulsion.
23. An industrial process according to any of claims 16 to 22, wherein said

process further comprises one or more steps of controlling the size of droplets or micelles produced during the emulsification step.

24. An industrial process according to claim 23, wherein said size controlling
5 step is performed by dynamic light scattering analysis.

25. An industrial process according to claim 24, wherein said process comprises
a post-processing step performed following the emulsification step and
further comprising one or more steps of controlling the size of emulsion
10 droplets or micelles during or after said post-processing step.

26. An industrial process according to claim 25, wherein said size controlling
step after said post-processing step is performed by dynamic light scattering
analysis.

15 27. An industrial process according to any of claims 23 to 26, wherein said size
controlling step is performed in such a way as to measure the average size
and/or the size distribution.

20 28. An industrial process according to claim 17, wherein said post-processing
step is a sonication step.

29. An emulsification method according to any of claims 1 to 10, wherein said
pre-mix of two or more immiscible liquids is milk, whereby the average size
25 of the smallest micelles or particles contained in milk is decreased by at least
50%.

30. An emulsification system according to claim 12, wherein the means for
generating one or more magnetic fields are mounted in the circuit or loop
30 downstream of the liquid containing portion and upstream of the means
whereby the two or more liquids contained in the liquid containing portion can
be conducted or circulated through the said one or more magnetic fields.

31. Products having improved storage stability, such as detergents, cleaning products, lubricants, cosmetic, veterinary and pharmaceutical compositions and food products, including an emulsion prepared according to a method according to any of claims 1 to 10.

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